CLAIMS

1. A method of manufacturing an organic electroluminescence display, the method comprising the steps of:

providing a substrate;

forming a first electrode layer on the substrate in a predetermined pattern;

aligning a mask having openings corresponding to the predetermined pattern with the substrate on which the first electrode layer is formed;

detachably attaching the mask and the substrate;

forming an organic layer by sequentially forming a plurality of organic material layers in a plurality of vacuum processing chambers, the organic layer being stacked on the first electrode layer formed on the substrate, the substrate being attached to the mask; and

forming a second electrode layer on the organic layer;

wherein the mask and the substrate are transferred between the vacuum processing chambers in an attached state.

2. A method of manufacturing an organic electroluminescence display as claimed in claim 1, wherein each of the organic material layers is formed in a different vacuum processing chamber.

3. A method of manufacturing an organic electroluminescence display as claimed in claim 2, the method further comprising the steps of:

providing vapor deposition sources for the vacuum processing chambers, the vapor deposition sources supplying organic materials for forming the organic material layers; and

configuring the vapor deposition sources to supply organic materials at predetermined evaporation rates when the substrate and the mask are loaded into the vacuum processing chambers.

4. A method of manufacturing an organic electroluminescence display as claimed in claim 1, the method further comprising the step of transferring the mask

and the substrate through a vacuum transfer chamber connecting the vacuum processing chambers.

5. A method of manufacturing an organic electroluminescence display as claimed in claim 1, wherein the mask and the substrate are attached using a mask formed of a magnetic material and a magnet.

6. A method of manufacturing an organic electroluminescence display as claimed in claim 5, wherein the step of detachably attaching the mask and the substrate further includes sandwiching the substrate between the mask and a plate-shaped magnet provided with a contact surface fully contacting a non-film formation surface side of the substrate and attaching the mask and the substrate with a magnetic force of the magnet.

7. A method of manufacturing an organic electroluminescence display as claimed in claim 1, further comprising the step of separating the mask and the substrate after the steps of forming the organic layer and forming the second electrode layer.

8. A method of manufacturing an organic electroluminescence display as claimed in claim 7, wherein the steps of attaching and separating the mask and the substrate and the step of transferring the attached mask and substrate are all performed in a vacuum atmosphere.

9. A method of manufacturing an organic electroluminescence display as claimed in claim 1, wherein the organic layer comprises at least first and second organic layers regularly arranged with different colors of light emitted, and the step of forming a plurality of organic material layers includes a step of forming the first organic layer by attaching a mask commonly used for forming the first and second organic layers with the substrate and a step of forming the second organic layer by separating the mask and the substrate, changing an alignment between the mask and

the substrate, and attaching the mask and the substrate again after forming the first organic layer.

10. A method of manufacturing an organic electroluminescence display as claimed in claim 9, the method further comprising the steps of:

separating the mask and the substrate after forming the first and second organic layers; and

forming the second electrode layer so as to cover the first and second organic layers in a vacuum processing chamber.

11. An apparatus for manufacturing an organic electroluminescence display, the organic electroluminescence display having a substrate, a first electrode layer formed on the substrate in a predetermined pattern, an organic layer including a plurality of organic material layers stacked on the first electrode layer in a predetermined pattern and a second electrode layer formed on the organic layer, the apparatus comprising:

an alignment mechanism for aligning a mask, having openings corresponding to the predetermined pattern, to the substrate on which the first electrode layer is formed and for detachably attaching the mask and the substrate;

a plurality of vacuum processing chambers for sequentially forming a plurality of the organic material layers on the substrate, the substrate being attached to the mask; and

a transferring mechanism for transferring the attached mask and substrate to one of the plurality of vacuum processing chambers to sequentially transfer the attached mask and substrate among the plurality of the vacuum processing chambers.

12. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 11, wherein each of the plurality of vacuum processing chambers forms only one layer of the plurality of organic material layers.

13. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 11, wherein each of the plurality of vacuum processing chambers

includes a vapor deposition source for supplying an organic material for forming an organic material layer.

14. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 11, further comprising a vacuum transfer chamber connecting the vacuum processing chambers, wherein the transferring mechanism is arranged in the vacuum transfer chamber.

15. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 11, further comprising an attachment fixture for attaching the substrate and the mask.

16. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 15, wherein the mask is formed of a magnetic material, and the attachment fixture is provided with a contact surface fully contacting a non-film formation surface side of the substrate, has at least the contact surface formed of a plate-shaped magnet, and has the substrate sandwiched between the mask and the contact surface attached with the mask by a magnetic force of the magnet.

17. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 11, wherein the organic layer includes at least first and second organic layers regularly arranged on the substrate with different colors of light emitted, the apparatus further comprising:

a first alignment mechanism for aligning a mask commonly used for forming the first and second organic layers with the substrate on which the first electrode layer is formed and detachably attaching the mask and the substrate;

a plurality of first vacuum processing chambers for sequentially forming the organic layers on the substrate attached with the mask;

a second alignment mechanism for separating the substrate on which the first organic layer is formed from the mask, changing the alignment between the substrate and the mask to a position to form the second organic layer, and for detachably attaching the substrate and the mask again; and

a plurality of second vacuum processing chambers for sequentially forming the second organic layer on the substrate attached with the mask again.

18. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 17, the apparatus further comprising:

a separating mechanism for separating the mask and the substrate after forming the second organic layer; and

a vacuum chamber for forming the second electrode layer on the substrate separated from the mask so as to cover the first and second organic layers.

19. An apparatus for manufacturing an organic electroluminescence display as claimed in claim 18, wherein the first, second and third alignment mechanisms comprise a mask support member configured to support the mask, a substrate support member configured to support the substrate, an attachment fixture support member configured to support the attachment fixture, and a movement mechanism for changing relative positions between the support members, wherein the mask and the substrate are aligned and the mask and the substrate are at least one of attached and separated by the attachment fixture by changing the relative positions of the support members.